

Louisville Technology Initiative

A Partnership for the Future



Dorsey DeMaster

UPS Airline

Advanced Flight Systems

Agenda

- History
- Louisville (SDF) Technology Demonstrations
- Surface Management System
- How Technology Improves Operations at SDF



History

- January 1996 UPS launched ADS-B development effort
- Partnered with many from industry and government
- Conducted flight trials in 1999 and 2000
- Equipped 107 B-757/767 aircraft
- Accumulated thousands of hours of operational experience



History

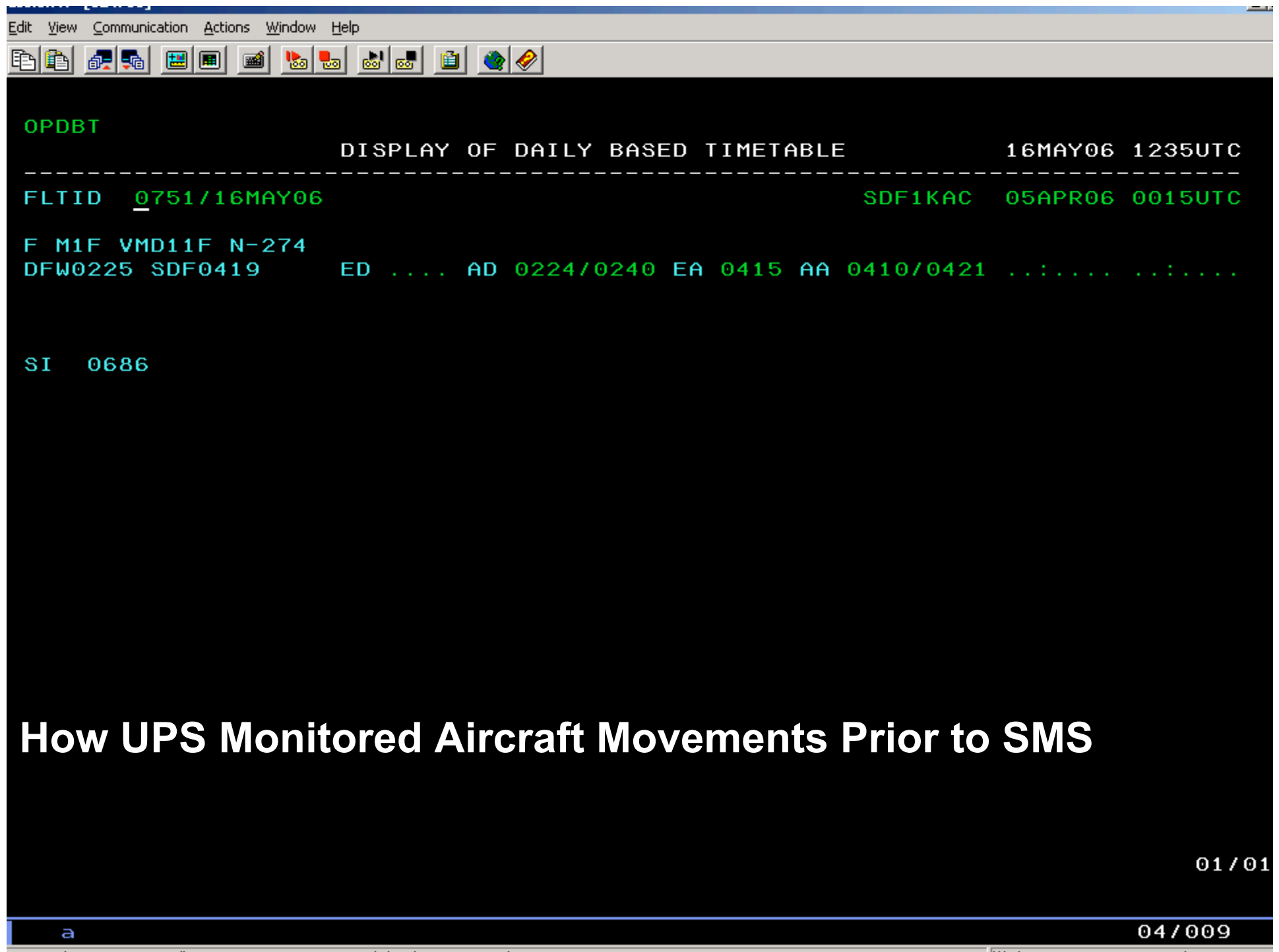
- 2002-2005 Congress funds Louisville Technology Initiative
- Brings together suite of technologies to
 - manage aircraft flow arriving and departing
 - provide safety and operational improvements
 - demonstrate future concepts in airline operations
 - provide blueprint for modernization at high density airports



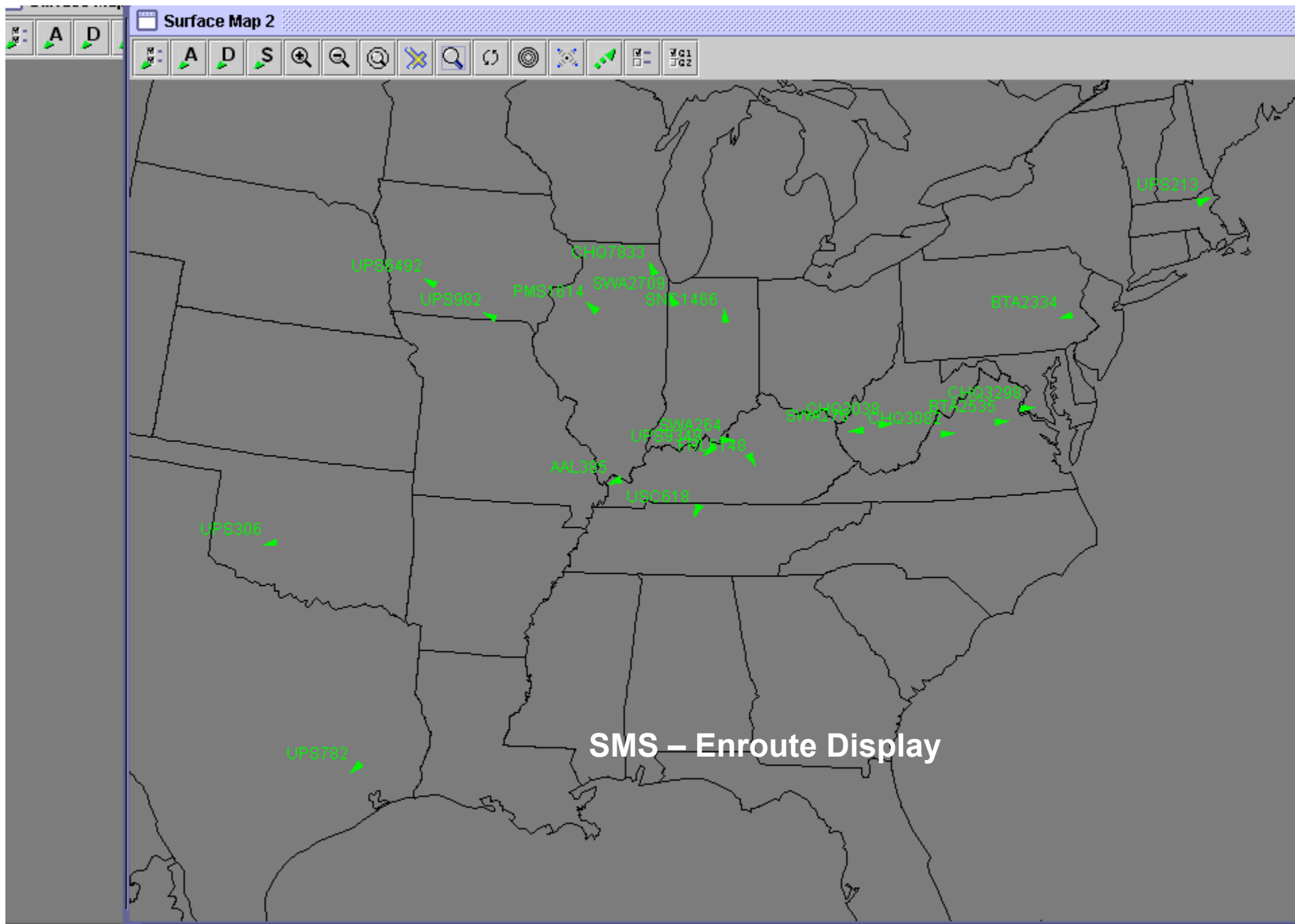
Louisville Technology Demonstration

- New terminal area automation system
- New surface surveillance system
- ADS-B CDTI 107 B-757 and B-767 aircraft – ADS-B “out” on other aircraft
- Successful test of Continuous Descent Arrivals (CDAs)
- Airline Based En Route Sequencing and Spacing (ABESS) tool
- Surface Management System (SMS)

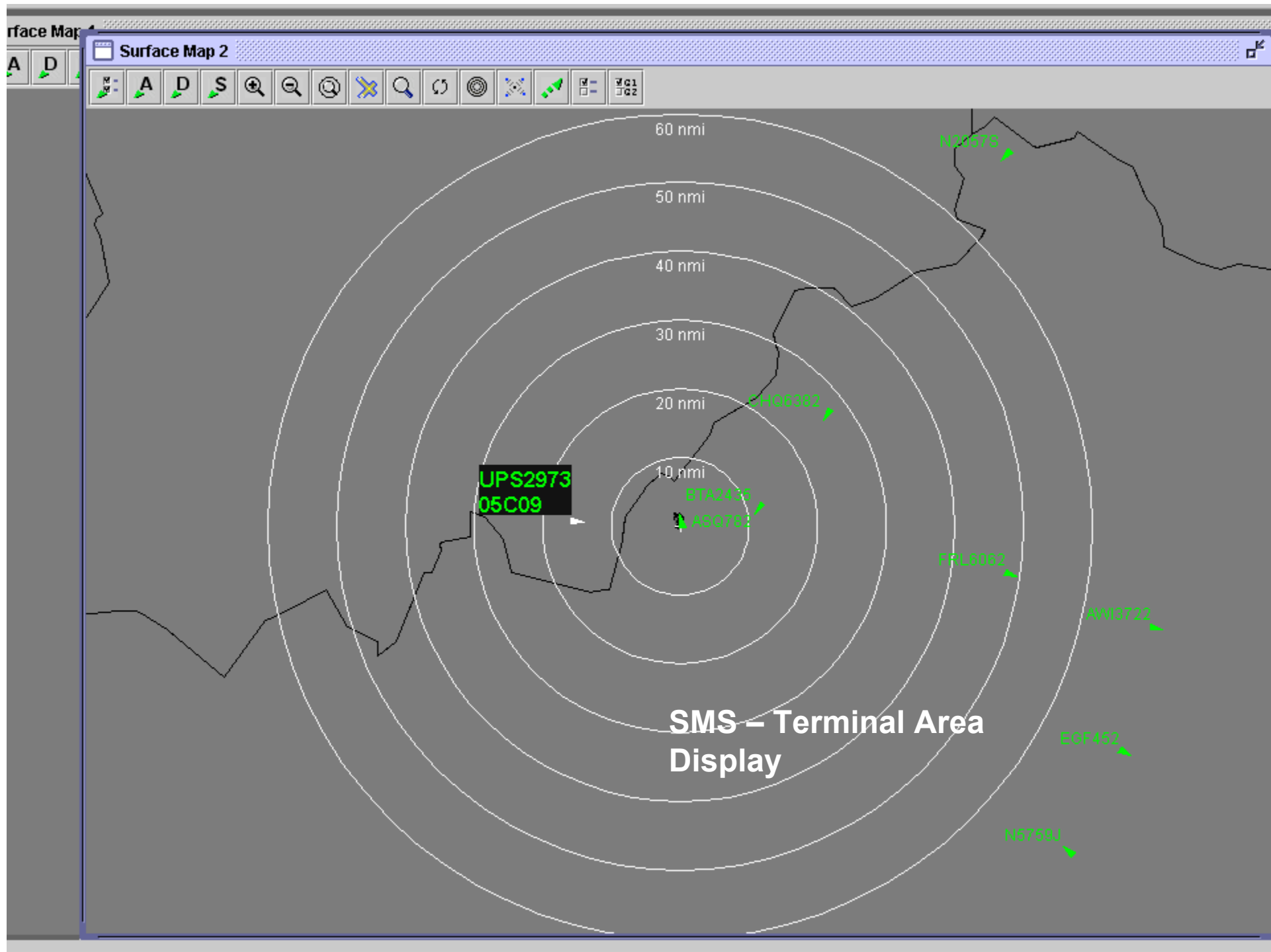


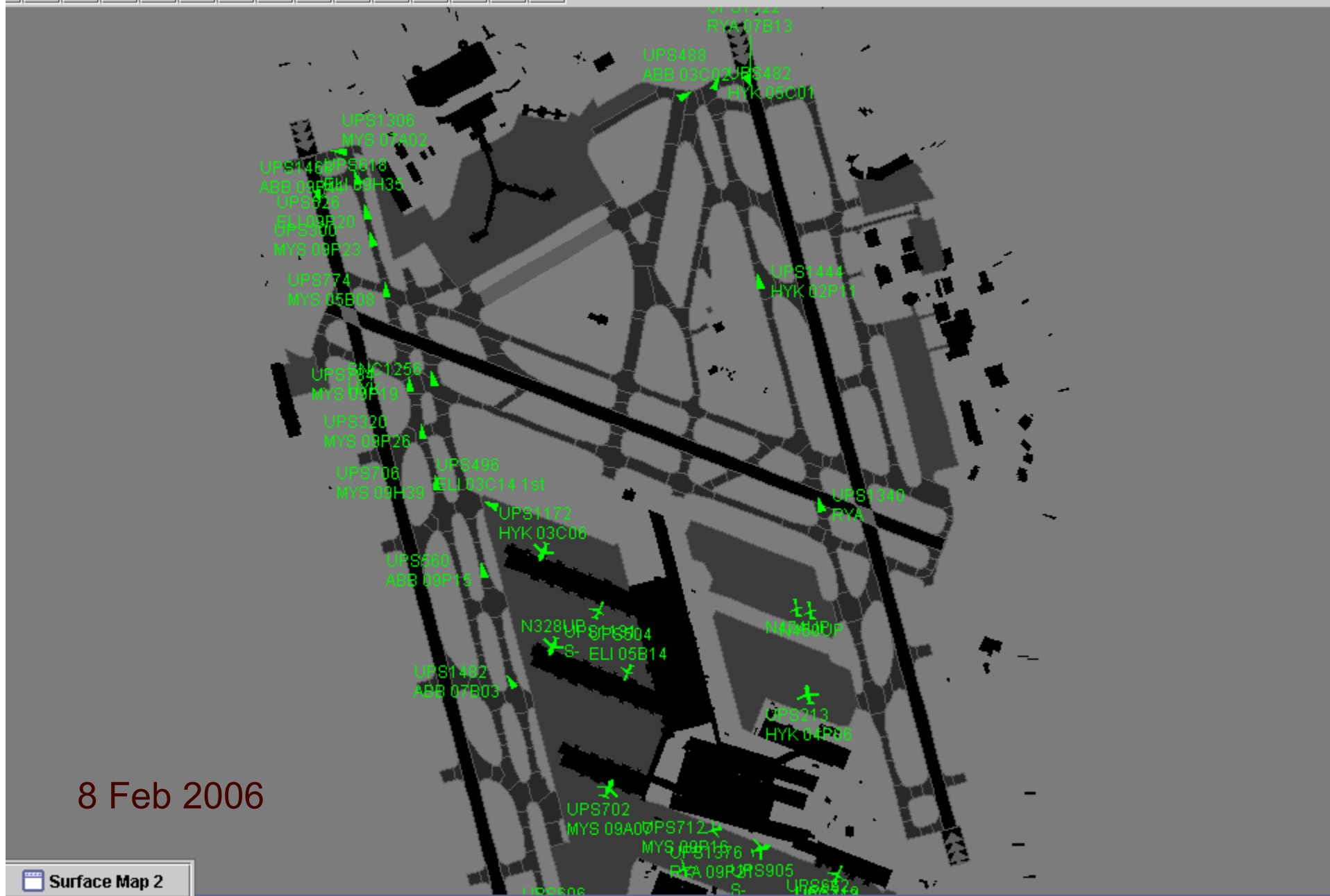


How UPS Monitored Aircraft Movements Prior to SMS



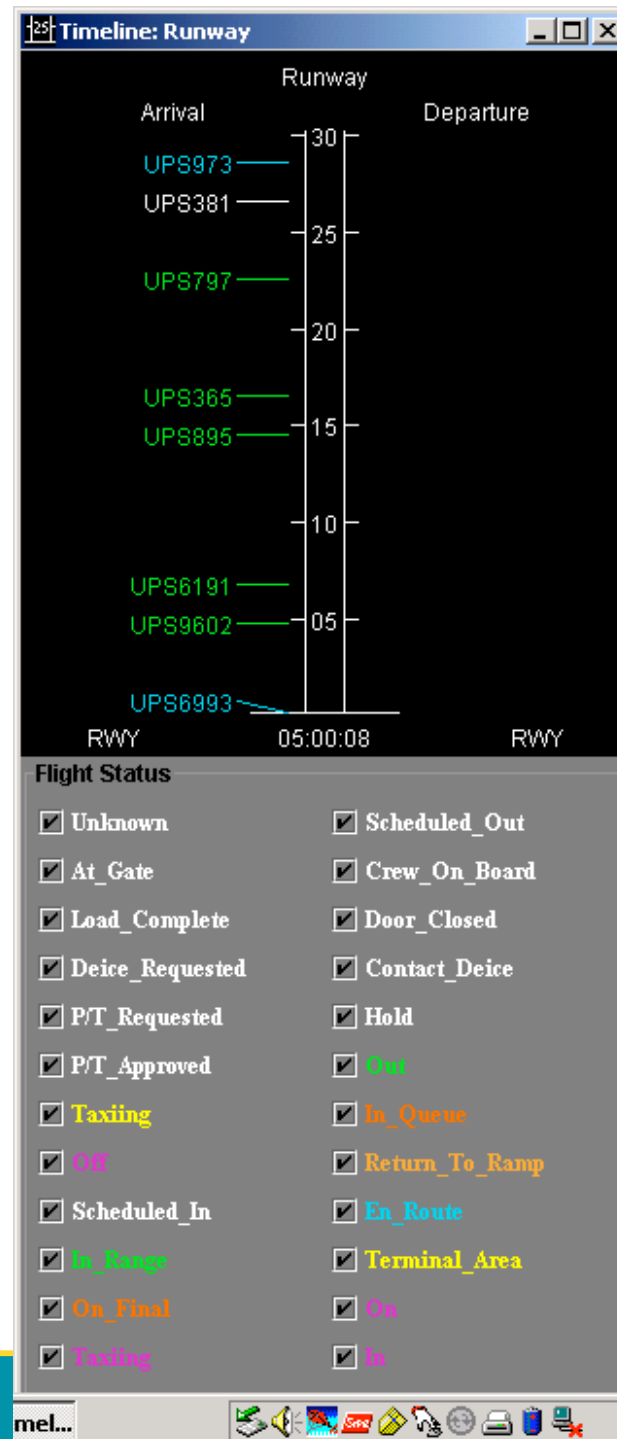
SMS – Enroute Display








8 Feb 2006

SMS Predictions Timeline



Airline=UPS; Results: 111 total. 10:00 GMT

Close    UPS272 Select

Flight ID	Tail	AC Type	Dest	Gate	Status	Crew On Board	Load Complete	Door Closed	Sched ... ▲	Out Time	Off Time	Ops Normal
UPS366		UNKN	ABY	09P27	Taxiing	01/08:47		01/09:13	01/09:01	01/09:32	E01/10:14	
UPS332	N137UP	UNKN	MIA	05B10	In_Queue	01/08:37		01/09:14	01/09:02	01/07:26	E01/10:01	
UPS368	N930UP	B72Q	BFM	09P20	Off	01/08:30		01/09:07	01/09:03	01/07:26	01/09:48	
UPS214	N148UP	A306	BWI	04P11	Off	01/08:41		01/09:15	01/09:04	01/07:26	01/09:43	
UPS86	N138UP	A306	EWB	03C12	Off	01/08:48		01/09:11	01/09:04	01/07:26	01/09:56	
UPS172	N131UP	A306	MDT	03C06	Off	01/08:45		01/09:11	01/09:05	01/07:26	01/09:45	
UPS304	N818UP	DC8Q	ATL	09A01	Off	01/08:22		01/09:16	01/09:07	01/07:26	01/09:54	
UPS6741	N310UP	UNKN	PHL	11P07	Out	01/08:43		01/09:24	01/09:07	01/09:32	E01/10:27	
UPS272	N410UP	B752	GSO	02P16	Off	01/08:40		01/09:12	01/09:08	01/09:39	01/09:40	01/09:42

Example “Electronic Aircraft Information” for Departures

Flight ID	...	Origin	Tail	AC Type	Gate	Rwy	Arr Fix	Status	Sched In T...	In Range ...	ArrFix Time	APU Inop	Bags In ...	On Time	In Time
UPS218	A	PHL	N319UP	B763	05B12	35L	MAU	In	09/16:47	09/16:38	09/16:22			09/16:33	09/16:39
UPS238	A	STN	N314UP	B763	09P15	E35L	N/A	Scheduled_In	10/06:40		E10/06:19			E10/06:34	E10/06:39
UPS2591	A	BIL	N148UP	A306	07B09	35L	CHE	In	09/15:55	09/16:10	09/15:42			09/15:55	09/16:00
UPS2871	A	ABQ	N124UP	A306	09P46	35L	CHE	In	09/16:17	09/16:10	09/15:54			09/16:08	09/16:18
UPS2909	A	ONT	N682UP	B741	09P06	35L	CHE	In	09/16:10	09/15:57	09/15:47			09/16:01	09/16:08
UPS2915	A	ONT	N301UP	B763	07A08	35L	CHE	In	09/16:24	09/16:06	09/15:44			09/15:58	09/16:03
UPS2945	A	OAK	N307UP	B763	09P30	35L	CHE	In	09/16:29	09/16:36	09/16:21			09/16:35	09/16:43
UPS2957	A	MHR	N434UP	B72Q	09P12	35L	CHE	In	09/15:58		09/15:57			09/16:10	09/16:18
UPS2973	A	PDX	N317UP	B763	09P28	35L	CHE	In	09/17:05	09/17:00	09/16:56			09/17:08	09/17:14
UPS2981	A	BFI	N306UP	B763	09A03	35L	CHE	In	09/17:00	09/17:10	09/16:53			09/17:03	09/17:09
UPS301	A	AUS	N163UP	A306	09P15	E35L	N/A	Scheduled_In	10/04:57		E10/04:52			E10/05:07	E10/05:12
UPS305	A	CJS	N450UP	B752	09P04	E35L	N/A	Scheduled_In	10/05:10		E10/05:06			E10/05:21	E10/05:25
UPS313	A	GDL	N441UP	B752	02P04	E35L	N/A	Scheduled_In	10/05:00		E10/05:00			E10/05:15	E10/05:19
UPS321	A	MEX	N405UP	B752	09P41	E35L	N/A	Scheduled_In	10/03:46		E10/03:27			E10/03:42	E10/03:49
UPS325	A	SJU	N157UP	A306	N/A	E35L	N/A	Scheduled_In	10/04:54		E10/04:48			E10/05:03	E10/05:08
UPS332	A	SJU	N124UP	A306	09P36	E35L	MAU	In Range	09/16:01	09/16:06	09/16:50			09/16:00	09/16:14

Example “Electronic Aircraft Information” for Arrivals

SMS Demonstration



How Technology is Improving Operations @ SDF

- Reduced noise, fuel use and emissions
- Increase airport capacity 15%-20%
 - currently average 42-45 per hour
 - improve to 53-56 per hour
- Manage aircraft in ground operations - SMS
 - reduced queuing
 - reduced taxi times and fuel burn
 - ramp management
 - \$1.2 million per year



Thank you

